

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

**TQ DELTA, LLC,
Plaintiff,**

v.

**COMMSCOPE HOLDING COMPANY,
INC. et al**

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Civil Action No. 2:21-cv-310-JRG

JURY TRIAL DEMANDED

**PLAINTIFF TQ DELTA'S
MEMORANDUM IN SUPPORT OF ITS MOTIONS FOR SUMMARY JUDGMENT
DIRECTED TO PATENT FAMILIES 1 AND 10**

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I. INTRODUCTION

Pursuant to Federal Rule of Civil Procedure 56, TQ Delta, LLC (“TQ Delta”) moves for summary judgment that (1) Commscope¹ infringes asserted claim 36 of U.S. Patent No. 7,570,686 (“the 686 Patent” or “the Family 1 Patent”)² by selling, offering for sale, and importing in the United States certain Accused Products;³ (2) Commscope infringes asserted claim 10 of U.S. Patent No. 9,154,354 (“the 354 Patent” or “the Family 10 Patent”)⁴ by selling, offering for sale, and importing in the United States certain Accused Products; and (3) claim 10 of the 354 Patent and claim 16 of U.S. Patent No. 8,937,988 (the “988 Patent”)⁵ are not invalid due to anticipation under 35 U.S.C. § 102, obviousness under 35 U.S.C. § 103, or for failure to meet the written description and enablement requirements of 35 U.S.C. § 112 (the “112 requirements”);

II. STATEMENT OF THE ISSUES

1. That TQ Delta is entitled to summary judgment that the Accused Products infringe claim 36 of the 686 Patent (Family 1).

2. That TQ Delta is entitled to summary judgment that the Accused Products infringe claim 10 of the 354 Patent (Family 10).

¹ “Commscope” used herein refers collectively to Defendants Commscope Holding Company, Inc., Commscope Inc., ARRIS International Limited, ARRIS Global Ltd., ARRIS US Holdings, Inc., ARRIS Solutions, Inc., ARRIS Technology, Inc., and ARRIS Enterprises, LLC.

² The 686 Patent is attached hereto as Exhibit A. “Exs. A-Q” cited herein are attached to the Declaration of Rajendra A. Chiplunkar dated December 14, 2022 filed herewith.

³ The “Accused Products” are those products containing the BCM 63168 DSL Chipset (5168N VDSL Gateway, 5168NV VDSL Gateway, 5268AC VDSL Gateway, NVG589 Triple Play Residential Gateway, NVG599 Triple Play Residential Modem), the BCM 63148 DSL Chipset (BGW210-700, NVG44x Voice Gateway, NVG448X), and the BCM6368 DSL Chipset (Pace 5031NV VDSL Gateway).

⁴ The 354 Patent is attached hereto as Exhibit B.

⁵ The 988 Patent is attached hereto as Exhibit C. The 354 Patent is a continuation of, and shares the same specification as, the 988 Patent. The 354 Patent and the 988 Patent will collectively be referred to herein as the “Family 10 Patents.”

3. That TQ Delta is entitled to summary judgment that claim 10 of the 354 Patent and claim 16 of the 988 Patent (Family 10) are not invalid under §§102, 103, and/or 112.

III. BACKGROUND OF THE TECHNOLOGY

A. Family 1

The 686 Patent relates to the exchange of diagnostic and test information between DSL modems to diagnose problems. Ex. D (Brody Opening Report) at ¶46. The 686 Patent describes a diagnostic mode that can be entered when for example if initialization fails or if an error threshold is exceeded during normal data transmission. Ex. D at ¶48. In the diagnostic mode, the patent proposes exchanging diagnostic information using a robust transmission scheme. Ex. D at ¶43.

B. Family 10

The 354 Patent relates to multicarrier modulation systems having multiple signal-to-noise ratio (“SNR”) margins. Ex. D at ¶49. The SNR of a particular subchannel and the Bit Error Rate (“BER”) requirement are used to determine the number of bits that will be assigned to that subchannel. *Id.* at ¶51. The SNR margin is an additional parameter that is used to allocate the number of bits per subchannel. *Id.* The SNR margin is used to increase a discrete multi-tone (“DMT”) system’s immunity to time varying impairments. *See id.* at ¶52. Prior to the invention described in the 354 Patent, then-current DMT systems allocated a single SNR margin to all subchannels. *Id.* at ¶54. The 354 Patent disclosed that different subchannels could be assigned different SNR margins in order to increase the overall data rate of the system while maintaining robustness. *Id.*

IV. STATEMENT OF UNDISPUTED MATERIAL FACTS

1. TQ Delta owns U.S. Patent No. 7,570,686. *See* Ex. A.
2. TQ Delta owns U.S. Patent No. 9,154,354. *See* Ex. B.
3. TQ Delta owns U.S. Patent No. 8,937,988. *See* Ex. C.

4. Commscope makes, sells and offers for sale the following products: 5031NV, the 5168N, the 5168NV, the 5268ac, the BGW210-700 (“BGW210”), the NVG44x series, the NVG589 and the NVG599, hereinafter “Accused Products”. Ex. D at ¶128.
5. TQ Delta alleges that the Accused Products infringe claim 36 of the 686 Patent. *See* Ex. D at ¶128.
6. TQ Delta alleges that the Accused Products infringe claim 10 of the 354 Patent. *See* Ex. D at ¶128.
7. The Accused Products are DSL CPE devices that include a DSL chip supplied by Broadcom. Ex. D at ¶¶129-133.
8. For each Accused Product, Defendant identified the DSL chipset. *See* Ex. E (Defendant’s Supplemental Response to Interrogatory No. 8 and Second Supplemental Response to Interrogatory No. 8) at p. 60-62 (August 19, 2022).
9. For each Accused Product, Defendant also identified the specific version of firmware for the DSL chipset, hereinafter “DSL Chipset Firmware” that implements and controls the accused DSL functionality. *See* Ex. F (Commscope’s First Supplemental Objections and Responses to Plaintiff’s Second Set of Interrogatories (No. 19)), Appendix A.
10. The 5031NV Accused Product includes the Broadcom BCM6368 DSL chipset to provide the accused DSL functionality. *See* Ex. E at p. 60-62
11. The 5168N, the 5168NV, the 5268ac, the NVG589 and the NVG599 Accused Products includes the Broadcom BCM63168 DSL chipset to provide the accused DSL functionality. *Id.*
12. The BGW210-700 (“BGW210”) and the NVG44x series Accused Products use the Broadcom BCM63148 DSL chipset to provide the accused DSL functionality. *Id.*

13. There are no material differences between the DSL functionality of the Accused Products that use the same DSL Chipset. *See* Ex. D at ¶130.
14. With regard to the DSL functionality, there are no material differences between the BCM63x68 and BCM63148. *See* Ex. I at ¶¶641-642.
15. With reference to the DSL functionality, the operation of the 5268AC Accused Product is representative of the 5168N, the 5168NV, the NVG589 and the NVG599 Accused Product. Ex. Q (Miller Dep. Tr.) at 85:14-16.
16. With reference to the DSL functionality, the operation of the BGW210 is representative of the NVG44x series Accused Products.
17. Third-party Broadcom Inc. makes the DSL chipsets and the DSL Chipset Firmware. *See* Ex. E (Defendant's Supplemental Response to Interrogatory No. 14 (November 14, 2022)) at p. 79 [REDACTED]
[REDACTED]
[REDACTED].").
18. Commscope admits that it [REDACTED]
[REDACTED].” *Id.*
19. [REDACTED]
[REDACTED]. Ex. H (Gong-San Yu Dep. Tr.) at 145:10–146:6, 152:9–19.
20. [REDACTED]
[REDACTED]
[REDACTED] Ex. H at 90:20-91:9; 91:24-92:18; 113:2-114:6; and 118:9-17.

21. [REDACTED]
[REDACTED] Ex. D at ¶¶134, 136, 141, 143-145 (§XIII).
22. [REDACTED]
[REDACTED]. Ex. D at ¶¶142, 146 (§XIII).
23. The Accused Products comply with the VDSL2 standard. Ex. D at ¶¶134, 136, 141, 143-145 (§XIII). The Accused Products also comply with G.INP. Ex. D at ¶¶142, 146 (§XIII).
24. [REDACTED] Ex. D at ¶¶150-152.
25. The VDSL2 standard provides an optional single latency with ROC mode. Ex. I (Cooklev Report) at ¶804; *see also* Ex. J (Al-Dhahir Rebuttal) at ¶136. If single latency with ROC mode is enabled, then the SNR margins can be different from one another. *See, e.g.*, Ex. J (Al-Dhahir Rebuttal) at ¶136.
26. When G.INP is used during VDSL2 operation, and the ROC is enabled, the target SNR margins for the two latency paths (i.e., the data path and the ROC) can be set to different values. *See, e.g.*, Ex. J (Al-Dhahir Rebuttal) at ¶163.

V. APPLICABLE LAW

TQ Delta recognizes the Court’s general familiarity with summary-judgment standards and will focus on legal issues specific to this brief.

VI. ARGUMENT

A. Motion for Summary Judgment of Infringement for Family 1

Dr. Brody opined that loop diagnostic mode or DELT specified in the VDSL2 standard is a mandatory requirement of the VDSL2 standard. *See* Ex. D (Brody Opening Report) at ¶74. As described below, Dr. Brody demonstrated that claim 36 is standard essential, i.e., compliance with the standard necessarily results in infringement of the claim, by comparing each element of claim

36 to the requirements of the VDSL2 loop diagnostic mode. Based on Commscope-produced documentation and witness testimony, Dr. Brody confirmed that the Accused Products implement the VDSL2 standard and, more specifically, the loop diagnostic mode or DELT specified in the VDSL2 standard. Testimony of Broadcom, the maker of the DSL chipsets that implement and control the relevant VDSL2 functionality of the Accused Products, also supports Dr. Brody's opinion that the Accused Products implement loop diagnostic mode or DELT as specified in the VDSL2 standard.

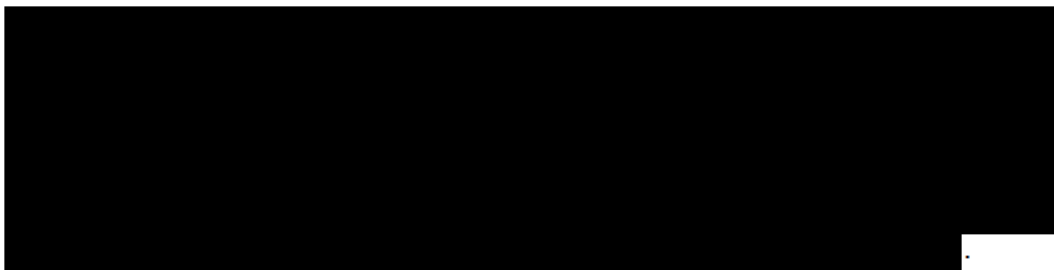
Dr. Brody also demonstrated infringement by comparing the elements of the claim with (i) the results of the testing of the Accused Products performed by Dr. Todor Cooklev and (ii) Dr. Todor Cooklev's analysis of the DSL Chipset source code that implements the loop diagnostic. As described below Commscope's expert, Dr. Cimini's, opinions do not raise a genuine dispute of material fact that the Accused Products include instructions that when executed direct a transceiver to perform the infringing loop diagnostic mode functionality specified in the VDSL2 standard and recited in claim 36.

1. The Asserted Claims are Standard Essential and the Accused Products Infringe the Claim Because They Comply with the Relevant Standard

"In cases involving standard essential patents, [the Federal Circuit has] endorsed standard compliance as a way of proving infringement. *Godo Kaisha IP Bridge I v. TCL Commc'n Tech. Holdings Ltd.*, 967 F.3d 1380, 1383 (Fed. Cir. 2020). Such as here, "where, a patent covers mandatory aspects of a standard, it is enough to prove infringement by showing standard compliance." *Id.* at 1384; *see also Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1327 (Fed. Cir. 2010) ("[I]f an accused product operates in accordance with a standard, then comparing the claims to that standard is the same as comparing the claims to the accused product.").

As described below, Dr. Brody confirmed that the Accused Products comply with the VDSL2 standard and more specifically, the loop diagnostic mode, read the claim elements on the relevant portions of the VDSL2 standard, *i.e.*, loop diagnostic mode, and concluded that practicing the VDSL2 standard meets the claim elements. To avoid a finding of infringement based on standard compliance, Dr. Cimini was “free to either prove that the claims do not cover all implementations of the standard or to prove that it does not practice the standard.” *Fujitsu*, 620 F.3d at 1327. He did neither.

Instead, Dr. Cimini makes two arguments neither of which undermine Dr. Brody’s opinions or allow Commscope to escape a summary finding of infringement based on standard compliance. First, Dr. Cimini asserts that “G.993.2 does not provide instructions to one of ordinary skill in the art, to build a transceiver.” Ex. K (Cimini Responsive Report) at ¶59. Dr. Cimini does not articulate why failure to provide these instructions renders the claim not standard essential. And, in any event, Dr. Brody explained that the Accused Products meet the Court’s construction of transceiver. *See* Ex. D (Brody Opening Report) at ¶¶230 and 459. Second, Dr. Cimini asserts that:



Ex. K (Cimini Responsive Report) at ¶60. Dr. Cimini’s generalized speculation does not provide the requisite *Fujitsu* analysis to show that the claim does not cover all implementations of the loop diagnostic mode as specified in the VDSL2 standard or that the Accused Products do not practice the standard mandated implementation of loop diagnostic mode.

Accordingly, none of Dr. Cimini’s reasons raise “material disputes of fact regarding whether the asserted claims are in fact essential to all implementations of” the VDSL2 standard.

See Godo, 967 F.3d at 1385. The Court should grant summary judgement of infringement based on the Accused Products' compliance with the VDSL2 standard, including implementation of the loop diagnostic mode mandated by the VDSL2 standard.

2. The Accused Products meet every limitation of the Asserted Claims

Dr. Brody analyzed the product documentation for the BGW210 Accused Product and the 5268AC Accused Product and confirmed that they complied with the VDSL2 standard and implemented the VDSL2 loop diagnostic mode. Dr. Brody relied on Commscope's product requirements documentation (referred to as the "Uber Matrix") to confirm that the BGW210 Accused Product and the 5268AC Accused Product implement the VDSL2 standard. Ex. D at ¶141 (BGW210) and ¶166 (5268AC).

Dr. Brody confirmed, based on the Uber Matrix, that the BGW210 and the 5268AC implement the VDSL2 standard's loop diagnostic mode. Ex. D at ¶235 (BGW210) and ¶464 (5268AC). Dr. Brody's conclusions were supported by the deposition testimony of Broadcom's corporate witness, Dr. Yu. [REDACTED]

[REDACTED] Ex. H at 123:10-19. Dr. Brody opined that when two or more Accused Products use the same DSL chipset and the same firmware, or firmware that is not materially different as it relates to the elements of the Asserted Claims, then the DSL functionality of any one of those products will be representative of the DSL functionality of the others of those products. Ex. D at ¶130. Based on the testimony of Broadcom's witness, Dr. Yu and product documentation, Dr. Brody concluded that every DSL chipset firmware release for each of the Accused Products includes the infringing functionality. Ex. D at ¶130. Dr. Brody then used the 5268AC Accused Product as a representative product to prove infringement of all Accused Products that included the BCM63168

DSL Chipset. *Imperium IP Holdings (Cayman), Ltd. v. Samsung Elecs. Co., Ltd.*, 259 F. Supp. 3d 530, 542 (E.D. Tex. 2017), *aff'd in part, rev'd in part*, 757 Fed. Appx. 974 (Fed. Cir. 2019) (recognizing that “use of a representative product to prove infringement for other accused products is proper under Federal Circuit law.”).

Dr. Brody mapped the elements of the claim to the relevant portions of the VDSL2 standards, *i.e.*, the requirements of the VDSL2 loop diagnostic mode. Based on this detailed analysis of the evidence, Dr. Brody concluded that the Accused Products implement loop diagnostic mode as specified in the VDSL2 standard and meet each element of the claim. Dr. Cimini does not dispute Dr. Brody’s conclusions in this regard. Accordingly, opinions offered by Dr. Brody regarding infringement by the BGW210 and 5268AC based on the product documentation and testimony of the DSL chip maker, Broadcom, are unrebutted.

In addition to mapping each element of the claim to the VDSL2 standard, as detailed below Dr. Brody also mapped the elements of the claim to the results of the testing performed by Dr. Cooklev. Dr. Cooklev tested the 5168NV. The 5168NV is functionally identical in relevant respects to the 5268AC because these products include the same DSL chipset. Thus, Dr. Brody concluded that the test results for the 5168NV are representative of the functionality of the 5268AC. Ex. D at ¶182. Also because the firmware for the BCM63148 DSL Chipset used in the BGW210 provided the same functionality as the BCM63168 DSL Chipset used in the 5168NV, Dr. Brody concluded that the test results for the 5168NV are representative of the functionality of the BGW210 Accused Product. Ex. D at ¶182. Dr. Cimini does not dispute Dr. Brody’s conclusions in this regard. Accordingly, opinions offered by Dr. Brody regarding infringement by the BGW210 and 5268AC based on the testing of the 5168NV Accused Product are unrebutted.

Finally, although cumulative in light of the other overwhelming evidence confirming infringement, Dr. Brody mapped the claim elements to the loop diagnostic mode functionality that Dr. Cooklev identified in the source code for the BCM63168 and BCM63148 DSL chipsets and concluded that the Accused Products implement loop diagnostic mode as specified in the VDSL2 standard. Dr. Cimini did not review the source code or directly opine on the functionality evidenced thereby. Instead, Dr. Cimini relies on the opinions of Mr. Walter Overby to attempt to discredit Dr. Brody's conclusions regarding the source code. However, as described below, Mr. Overby's opinions are unsupported by the evidence and do not create a genuine dispute that the Accused Products implement the loop diagnostic mode as claimed. *See* § VI.A.3.c *infra*.

a) 36[Preamble] - An information storage media comprising instructions that when executed communicate diagnostic information over a communication channel using multicarrier modulation comprising:

Dr. Brody mapped the preamble to the VDSL2 standard and opined based on product documentation that the BGW210 and 5268AC and the other Accused Products that they respectively represent meet the preamble of claim 36. Ex. D at §XVI.A.1.a (BGW210) and §XVI.D.1.a (5268AC). Dr. Brody further mapped the preamble to the results of the testing (Ex. D at ¶218 (BGW210) and ¶447 (5268AC)) and the source code (Ex. D at ¶210 (BGW210) and ¶439 ((5268AC)). Dr. Brody concluded that Accused Products meet the preamble of claim 36. Ex. D at ¶221 (BGW210) and ¶450 (5268AC).

b) 36[a] instructions that when executed direct a transceiver to receive or transmit an initiate diagnostic mode message; and,

Dr. Brody mapped this element to the VDSL2 standard and opined based on product documentation that the BGW210 and 5268AC and the other Accused Products that they respectively represent meet this element of claim 36. Ex. D at §XVI.A.1.b (BGW210) and §XVI.D.1.b (5268AC). Dr. Brody further mapped this element to the results of the testing (Ex. D

at ¶238 (BGW210) and ¶467 (5268AC)). Dr. Brody concluded that Accused Products meet this element of claim 36. Ex. D at ¶241 (BGW210) and ¶468 (5268AC).

c) 36[b] instructions that when executed transmit from the transceiver a diagnostic message using multicarrier modulation with DMT symbols that are mapped to one bit of the diagnostic message

Dr. Brody mapped this element to the VDSL2 standard and opined based on product documentation that the BGW210 and 5268AC and the other Accused Products that they respectively represent meet this element of claim 36. Ex. D at §XVI.A.1.c (BGW210) and §XVI.D.1.c (5268AC). Dr. Brody further mapped this element to the results of the testing (Ex. D at ¶252 (BGW210) and ¶481 (5268AC)) and the source code (Ex. D at ¶250 (BGW210) and ¶479 (5268AC)). Dr. Brody concluded that Accused Products meets this element of claim 36. Ex. D at ¶255 (BGW210) and ¶485 (5268AC).

d) 36[c] – wherein the diagnostic message comprises a plurality of data variables representing the diagnostic information about the communication channel, and,

Dr. Brody mapped this element to the VDSL2 standard and opined based on product documentation that the BGW210 and 5268AC and the other Accused Products that they respectively represent meet this element of claim 36. Ex. D at §XVI.A.1.d (BGW210) and §XVI.D.1.d (5268AC). Dr. Brody further mapped this element to the results of the testing (Ex. D at ¶252 (BGW210) and ¶481 (5268AC)) and the source code (Ex. D at ¶261 (BGW210) and ¶491 (5268AC)). Dr. Brody concluded that Accused Products meets this element of claim 36. Ex. D at ¶263 (BGW210) and ¶493 (5268AC).

e) 36[d] - wherein one variable comprises an array representing frequency domain received idle channel noise information.

Dr. Brody mapped this element to the VDSL2 standard and opined based on product documentation that the BGW210 and 5268AC and the other Accused Products that they

respectively represent meet this element of claim 36. Ex. D at §XVI.A.1.e (BGW210) and §XVI.D.1.e (5268AC). Dr. Brody further mapped this element to the results of the testing (Ex. D at ¶276 (BGW210) and ¶506 (5268AC)) and the source code (Ex. D at ¶274 (BGW210) and ¶504 (5268AC)). Dr. Brody concluded that Accused Products meets this element of claim 36. Ex. D at ¶279 (BGW210) and ¶509 (5268AC).

3. Commscope Cannot Avoid Summary Judgement

Dr. Cimini makes several arguments; none of which create a genuine dispute of material fact.

a) The Testing Demonstrates that the Accused Products Infringe Claim 36

First, Dr. Cimini contends that the testing performed by Dr. Cooklev does not show that the Accused Products “would ever enter the loop diagnostic mode as it is deployed by CommScope customers.” Ex. K (Cimini Responsive Report) at ¶66. Dr. Cimini’s contention is not material to the issue of infringement. The claim is directed to the instructions (firmware) deployed with the Accused Product, not the use of those instructions by Commscope’s customers. Dr. Brody and Dr. Cooklev demonstrated that the Accused Products are deployed with the instructions that implement loop diagnostic mode. Whether or not the Accused Products enter loop diagnostic mode in a customer’s deployment does not bear on the issue of infringement. *See, e.g., VirnetX Inc. v. Apple Inc.*, 792 Fed. App’x 796, 808 (Fed. Cir. Nov. 22, 2019) (“When it is ‘undisputed that software for performing the claimed functions existed in the products when sold,’ infringement occurs when the party sells those products.”).

b) Dr. Cimini’s Improper Claim Construction Cannot Defeat Summary Judgment

Second, Dr. Cimini identifies three possible interpretations of “transmit from the transceiver a diagnostic message using multicarrier modulation with DMT symbols that are

mapped to one bit of the diagnostic message” then picks one of the three (without explaining why) and provides a non-infringement opinion base exclusively on the one interpretation. Ex. K at ¶¶80-81. The Court accorded this term its plain meaning. Accordingly, the term is entitled to its full scope. Dr. Cimini’s feeble attempt at belated claim construction is improper because judges, not experts or jurors, construe claims. Accordingly, TQ Delta has concurrently filed a motion to strike Dr. Cimini’s opinions on this point, which if granted would render Dr. Cimini’s non-infringement opinions moot. Further, Dr. Cimini provides no basis, lexicography or disavowal, to apply the interpretation he applies for non-infringement purposes. The plain meaning of the term includes the other meanings he identifies and, by Dr. Cimini’s own admission, the transmission of diagnostic messages mandated by the VDSL2 standard fall within the scope of those other meanings, thereby confirming infringement.

c) Dr. Cimini’s Opinions Regarding the Source Code do not Raise a Genuine Issue

Third, Dr. Cimini contends that “[f]or the reasons specified by Mr. Overby, I find that Dr. Cooklev’s analysis fails to evidence that the Accused Products infringe claim 36 of the ’686 patent.” Ex. K at ¶88. However, Mr. Overby’s opinions do not raise a genuine or material dispute. As an initial matter, Mr. Overby concedes that he doesn’t have any opinions regarding DSL standards. Ex. L (Overby Dep. Tr. ROUGH) at 7:22-25. Mr. Overby admits that he does not know whether or not the Accused Products implement the VDSL2 loop diagnostic mode. *Id.* at 46:24-47:1 and 49:13-16. And although Mr. Overby criticizes Dr. Cooklev’s analysis for not acknowledging certain compile and run-time conditionals, Mr. Overby admits that he does not know one way or the other the state of the compile and run-time conditionals. *Id.* at 105:2-4; 55:23-25 [REDACTED]

[REDACTED] and 65:5-7. However, at his deposition when questioned on a source

code file produced by Commscope, Mr. Overby confirmed [REDACTED]. *Id.* at 62:18-22. Indeed, Mr. Overby admitted that he “cannot rule out that the software behaves the way that [Dr. Cooklev] thinks it does.” *Id.* at 151:22-23. The best Mr. Overby can offer is that “it *may be the case* that the -- the impact of my opinions may be that loop diagnostic mode is not implemented.” *Id.* at 48:23-25.

Based on the foregoing, it is clear that Mr. Overby’s opinions that purport to dispute Dr. Cooklev’s opinions regarding the source code are based on speculation and “[s]peculation is not evidence or a genuine dispute of fact.” *Wright v. Union Pac. R.R. Co.*, 2022 WL 1747002, at *2 (S.D. Tex. May 31, 2022); *see also SA Music LLC v. Apple, Inc.*, 592 F. Supp. 3d 869, 895 (N.D. Cal. 2022) (“An unsupported possibility” is not a “concrete dispute of material fact.”). Accordingly, Dr. Cimini’s opinions that rely on Mr. Overby’s speculation cannot create a genuine dispute of material fact.

B. Motion for Summary Judgment of Infringement for Family 10

1. TQ Delta Has Presented Substantial Unrebutted Evidence that the Accused Products Infringe Claim 10 of the 354 Patent

TQ Delta’s expert, Dr. Arthur Brody, mapped claim 10 of the 354 Patent onto functionality described in the VDSL2 and G.inp standards. As explained *supra* in Section VI.A.2, based on Broadcom’s witness and product documentation, Dr. Brody concluded that every DSL chipset firmware release for each of the Accused Products includes the infringing functionality. Ex. D at ¶130. Dr. Brody then used the BGW210 and 5268AC Accused Products as representative products for his infringement analysis. *See Imperium*, 259 F. Supp. 3d at 542. Dr. Brody identified three independent ways that the Accused Products infringe: (1) VDSL2 operation with ROC explicitly enabled (Mode 1); (2) VDSL2-G.INP operation with ROC explicitly enabled (Mode 2); and (3)

VDSL2-G.INP operation where ROC is not explicitly enabled but is enabled by default (Mode 3). This motion is only directed to Dr. Brody's infringement opinions based on Mode 1 and Mode 2.

For his infringement opinions that rely on Mode 1, Dr. Brody explained how every element of claim 10 maps to functionality described in the VDSL2 standard. *See* Ex. D (Brody Opening Report) at §XVI.A.2 (BGW210), §XVI.D.2 (5268AC). For his opinions based on the implementation of Mode 2, Dr. Brody again explained how claim 10 is mapped to the VDSL2 and G.INP standards. *See id.* at §XVI.B. and §XVI.E. Dr. Al-Dhahir, does not dispute Dr. Brody's mapping of claim 10 to these standards. *See generally* Ex. J (Al-Dhahir Responsive Report) at §XIII.A.1.

Further, based on Commscope's documents stating that the Accused Products implement the VDSL2 and G.INP standards (Ex. D, ¶¶141-142 (BGW210) and ¶¶166-167 (5268AC)) and Broadcom's corporate witness, Dr. Gong-San Yu, [REDACTED], Dr. Brody concluded that the Accused Products implement Mode 1 and Mode 2 functionality and infringe the asserted claim. SOF #19. Commscope asserts that it [REDACTED] [REDACTED] SOF #18. Further, TQ Delta's expert, Dr. Todor Cooklev, analyzed the portions of the source code for the BCM63168 and the BCM63148 DSL Chipsets that implement the Mode 1 and Mode 2 functionality.⁶ Ex. I at ¶¶41, 45, 55-62. Based on Dr. Cooklev's analysis, Dr. Brody opined that the source code also demonstrates that the Accused Products include the functionality recited in claim 10 of the 354 Patent. *See* Ex. D at ¶¶312-313, 331-332, 350-351, 365-366, 378-379, 393-394 (for BGW210,

⁶ Dr. Cooklev determined that there were no material differences between the source code for the BCM63168 and the BCM63148 as it relates to the functionality relevant to Family 10. SOF #14.

Mode 1); *id.* at ¶¶406-408 (for BGW210, Mode 2); *id.* at ¶¶541-542, 560-561, 579-580, 594-595, 607-608, 622-623 (for 5268AC, Mode 1); *id.* at ¶¶635-637 (for 5268AC, Mode 2); *see also* Ex. I (Cooklev Opening Report) at §VII.C.6.a.2, VII.C.6.b.2 (BCM63148 source code analysis); *id.* at §VII.C.6.b.1 (BCM63168 source code analysis).

Accordingly, Dr. Brody demonstrated that the Accused Products infringe claim 10.

2. Commscope Cannot Avoid Summary Judgment

Commscope's expert on non-infringement, Dr. Naofal Al-Dhahir, opined that the Accused Products do not infringe claim 10 of the 354 Patent under any of the modes identified by Dr. Brody. *See* Ex. J at §XIII. For each of the three theories, Dr. Al-Dhahir opined that (1) standard compliance does not necessitate infringement, (2) the testing performed by Dr. Cooklev is flawed, and (3) Dr. Brody has failed to establish that all claim elements are met. *Id.* As an initial matter, testing is not material to this motion because the testing related only to Mode 3. The other reasons identified by Dr. Al-Dhahir, however, do not create a genuine dispute of material fact. Because Dr. Al-Dhahir's analysis is nearly identical for all three modes of infringement, Dr. Al-Dhahir's opinions are addressed together below.

a) The Accused Products Implement the Standards

Dr. Al-Dhahir asserts that infringement cannot be proven by reference to standards because the explicit ROC (Mode 1 and Mode 2) is optional and "G.inp is an optional enhancement" of VDSL2. To the contrary, when relevant sections of a standard are optional, a patent owner may prove infringement by "prov[ing] that the accused products implement any relevant optional sections of the standard." *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1328 (Fed. Cir. 2010). This TQ Delta has done. Specifically, Broadcom's corporate witness, Dr. Gong-San Yu, [REDACTED]

[REDACTED] SOF #19. And Commscope admits that it [REDACTED]

██████████.

██████████.” SOF #18. As such, the Accused Products implement the portions (Mode 1 and Mode 2) of the VDSL2 and G.INP standards to which Dr. Brody mapped claim 10.

b) Every Element of Claim 10 is Met by the Accused Products

Dr. Al-Dhahir’s assertion that Dr. Brody has failed to establish that claim elements 10[c]⁷, 10[d]⁸, 10[f]⁹, and 10[g]¹⁰ are not met by the Accused Products is not supported by relevant evidence consistent with the Court’s claim construction and, thus, do not raise a genuine dispute of material fact.

First, Dr. Al-Dhahir argues that claim elements 10[c] and 10[d] are not met by the Accused Products because they allegedly “do[] not use an SNR margin to receive a plurality of bits.” Ex. J (Al-Dhahir Responsive Report) at ¶132; *see also id.* at ¶¶157, 185. The Defendants made this same argument during claim construction, albeit in the context of an indefiniteness challenge. The Court rejected this argument. *See* Dkt. No. 169 at pp. 109-110. The Court reasoned that “[p]articularly when reading the claim language in light of this disclosure in the specification, the limitation of ‘receive a first plurality of bits on the first plurality of carriers using a first SNR margin,’ for example, is readily understood not as referring to using the SNR margin to receive the bits, as Defendants suggest, but rather as referring to receiving carriers that were transmitted using a particular SNR margin.” *Id.* With reference to Dr. Al-Dhahir’s assertion, his analysis focuses on a receiver not being required to know the target SNR margin or measured SNR margin during the time that it is receiving bits. *Id.* But Dr. Al-Dhahir’s assertions are not relevant to the Court’s

⁷ “receive a first plurality of bits on the first plurality of carriers using a first SNR margin”

⁸ “receive a second plurality of bits on the second plurality of carriers using a second SNR margin”

⁹ “wherein the first SNR margin is different than the second SNR margin”

¹⁰ “and wherein the first SNR margin provides more robust reception than the second SNR margin”

construction of “SNR margin,” which is “a parameter used in determining the number of bits allocated to each of a plurality of carriers, where the value of the parameter specifies an extra SNR requirement assigned per carrier in addition to the SNR required to maintain a specified bit error rate (BER) for the communication link at a specified bit allocation.” Dkt. No. 169 at p. 116 (emphasis added). Dr. Al-Dhahir does not opine that the Accused Products do not implement SNR margins that are “used in determining the number of bits allocated to each of a plurality of carriers . . .,” per the Court’s construction. Instead, his opinions are directed to an improper re-write of the Court’s claim construction. Dr. Al-Dhahir’s opinions should be rejected for the same reasons that the Court rejected the Defendants indefiniteness arguments.

Dr. Al-Dhahir’s assertion that 10[c] and 10[d] are not met because Dr. Cooklev’s analysis of the Broadcom source code failed to establish that the [REDACTED]

[REDACTED] is insufficient to defeat summary judgement. Ex. J (Al-Dhahir Responsive Report) at ¶134 (citing Ex. N (Overby Report) at ¶119 & 120). Dr. Al-Dhahir admitted that he did not review any of the source code. *See* Ex. M (Al-Dhahir Dep. Tr. ROUGH) at 45:24-46:1 [REDACTED]

[REDACTED] Instead, Dr. Al-Dhahir’s opinions regarding the source code are based on another Commscope expert, Mr. Overby. *See* Ex. M (Al-Dhahir Dep. Tr. ROUGH) at 97 [REDACTED]

[REDACTED] However, Mr. Overby never concluded that the “targetMargin” value in the source code is not used as claimed.¹¹ Accordingly, Dr. Al-Dhahir’s opinion is conclusory and a conclusory assertion is not

¹¹ Mr. Overby admitted that (i) he did not review the DSL standards in forming his opinions (Overby Dep. Tr. ROUGH at 37), (ii) he has never seen a DSL standard (*id.* at 38), (iii) he had no knowledge regarding whether the Accused Products implement the DSL standards (*id.* at 39), (iv)

enough evidence to raise a genuine issue of material fact. *See Lechuga v. Southern Pacific Transp. Co.*, 949 F.2d 790, 798 (5th Cir. 1992). Accordingly, Dr. Al-Dhahir's opinions do not raise a genuine dispute of material fact regarding elements 10[c] and 10[d].

With respect to claim elements 10[f] and 10[g], Dr. Al-Dhahir opined that [REDACTED]

[REDACTED] Ex. J (Al-Dhahir Responsive Report) at ¶138; *see also id.* at ¶139 (discussing 10[g]). But, as Dr. Al-Dhahir implicitly recognizes, if the SNRMOFFSET-ROC value is set to a non-zero value (and Dr. Al-Dhahir does not dispute that it can be set to a non-zero value), then the first SNR margin will be different than the second SNR margin. *See, e.g.,* Ex. J at ¶136. The claim is directed to what the Accused Products are capable of doing without modification of their hardware or source code; not how their parameters have been set at any particular time. Accordingly, Dr. Al-Dhahir does not raise a material dispute regarding elements 10[f] and 10[g].

Lastly, citing “generally” to Dr. Overby's report, Dr. Al-Dhahir argues that Dr. Cooklev's source code analysis [REDACTED]

[REDACTED] Ex. J at ¶140. But again, Dr. Al-Dhahir did not review the source code and Dr. Overby has no basis to provide opinions regarding whether the accused functionality is present in the source code. And with respect to the alleged “different conditional factors” referred to by Dr. Al-Dhahir, Dr. Overby admitted that each such conditional was defined in the source code thereby debunking Dr. Al-Dhahir's argument altogether. *See* Ex. Ex. L (Overby Dep. Tr. ROUGH) at 137 [REDACTED]

he had no opinion how the variables are used in the source code (*id.* at 119:22-25) and (v) he did not know what the variables were used for (*id.* at 118:5-13).

[REDACTED]).

In fact, Mr. Overby admitted that he “cannot rule out that the software behaves the way that [Dr. Cooklev] thinks it does.” *Id.* at 151:22-23. Based on the foregoing, it is clear that Mr. Overby’s opinions that purport to dispute Dr. Cooklev’s opinions regarding the source code are based on speculation and “[s]peculation is not evidence or a genuine dispute of fact.” *Wright v. Union Pac. R.R. Co.*, 2022 WL 1747002, at *2 (S.D. Tex. May 31, 2022); *see also SA Music LLC v. Apple, Inc.*, 592 F. Supp. 3d 869, 895 (N.D. Cal. 2022) (“An unsupported possibility” is not a “concrete dispute of material fact.”). Accordingly, Dr. Al-Dhahir’s opinions that rely on Mr. Overby’s speculation cannot create a genuine dispute of material fact. As such, there is no genuine dispute of material fact that the Accused Products meet every limitation of claim 10 due to the native functionality of both Mode 1 and Mode 2 present in the Accused Products as sold, offered for sale, and imported in the United States.

C. Motion for Summary Judgment of No Invalidity for Family 10

Defendants’ invalidity claims under 35 U.S.C. §§ 102, 103, and 112 are highly fact sensitive issues, and Defendants must prove those claims by clear and convincing evidence. When all but the very simplest technologies are involved, testimony by persons knowledgeable about the relevant art is necessary to support such claims. Defendants intend to rely on the testimony of their expert, Mark Lanning, to support their invalidity claims. On August 29, 2022, Defendants served Mr. Lanning’s Report on the invalidity of the asserted claims of the Family 10 Patents. In his Report, Mr. Lanning provided his opinions as to why those claims are invalid for failing to meet the requirements of 35 U.S.C. §112 and under 35 U.S.C. §§ 102 and 103 in view of a variety of prior art references. In doing so, he relied on and applied a construction of the claim term “SNR margin” that differed from the Court’s construction of that term. Therefore, TQ Delta has filed a motion to strike Mr. Lanning’s Report and preclude him from testifying at trial on the issue of

invalidity. If the Court grants TQ Delta's motion to strike, Defendants will have no expert testimony on the issue of validity.

Without Mr. Lanning's testimony to provide evidence regarding the state of the art, the level of ordinary skill in the art, how a person of skill in that art would understand the prior art references in question and their similarities and differences with the claims as construed by the Court, and other facts that Defendants are required to prove to sustain their invalidity claims and defenses, Defendants will have no evidence to present at trial to meet their heavy burden of proof on those claims and defenses.

Therefore, should the Court grant TQ Delta's motion to strike, the Court should then grant summary judgment in TQ Delta's favor on Defendants' invalidity claims and defenses with respect to the Family 10 Patents.

Assuming the Court grants TQ Delta's motion to strike the expert report of Mark Lanning on the issue of invalidity, Defendants will have no expert witness testimony on the issues of anticipation, obviousness, or enablement/written description. Defendants' lack of any expert witness testimony on invalidity by itself is sufficient grounds to grant summary judgment dismissing their invalidity defenses and counterclaims. *See Knorr-Bremse Systeme GmbH v. Dana Corp.*, 133 F. Supp. 2d 843, 860 (E.D. Va. 2001) (“[D]epending on the complexity and technology involved in the claimed invention and the prior art, expert testimony is often necessary to establish the factual predicates underlying a determination regarding obviousness. . . .”); *Function Media, L.L.C. v. Google, Inc.*, No. 2:07-cv-279-CE, 2011 U.S. Dist. LEXIS 101998, at *6 (E.D. Tex. Sep. 9, 2011) (“Google’s failure of proof largely arises from the failure of its expert, Mr. Lanning, to sufficiently explain why the prior art teaches or renders obvious the ‘computer program design filter’ limitation Given the complexity of the technology and patents in this case, expert

testimony was required to establish invalidity on the grounds of anticipation and obviousness.”), *aff’d*, 708 F.3d 1310 (Fed. Cir. 2013); *Lucent Techs. Inc. v. Gateway, Inc.*, 2007 U.S. Dist. LEXIS 35557, at *19 (S.D. Cal. May 15, 2007) (“Lacking an expert, Defendants have no other evidence on which to base the knowledge of one of skill in the art; the patent itself does not suffice. Moreover, the Court finds that the ‘759 patent is not a simple technology and the specification is not readily accessible to interpretation by the average layman juror.”).

The technology at issue in this case relates to multicarrier modulation systems and methods that assigns different signal-to-noise (“SNR”) margins to different pluralities of carriers to address the tradeoff between channel robustness and the available data rate. Defendants cannot credibly argue that the technology in this case is a “simple” technology that does not require expert testimony or that the prior art references are understandable without expert testimony. *See Alexsam, Inc. v. IDT Corp.*, 715 F.3d 1336, 1348 (Fed. Cir. 2013) (“[T]he technology was complex and the prior-art references were not easily understandable without expert testimony. The claim that the technology is simple is belied by the fact that both sides believed it necessary to introduce extensive expert testimony regarding the content of the prior art.”). Indeed, the high complexity of the prior art references is demonstrated by the fact that U.S. Patent No. 6,516,027 (“Kapoor”) (Ex. O) and the 187-page Chow thesis (attached as part of Ex. P (Lanning Opening Report)) relied on by Defendants include complex technical theories, mathematical equations, and parameter values (*see e.g.*, Ex. O (Kapoor) at 8:20-24 and Fig. 5 (cited in Ex. P (Lanning Opening Report at), *e.g.*, pp. 83-85, 88-89)) and ambiguous graphs (*see, e.g.*, Chow at Figs. 6.20 – 6.27 (cited in Ex. P at, *e.g.*, pp. 102-109, 113-116, 118-122, 125-136)). Further, Defendants’ own expert opined that a person of skill in the art would be highly technically skilled and educated, *i.e.*, would have a “bachelor’s degree in electrical or computer engineering and 5 years of experience in

telecommunications or a related field, a Master's degree in electrical engineering and 2-3 years of experience in telecommunications or a related field, or a Ph.D. in electrical engineering with 1-2 years of experience in telecommunications or a related field.” Ex. P at ¶ 59.

Moreover, the Court need do no more than review the Family 10 Patents to see that this case involves complex technology. *See* Ex. B (354 Patent); Ex. C(988 Patent). In fact, the Court, has acknowledged as much by appointing a technical advisor to the case. Dkt. No. 130.

Defendants will not be able to rely on attorney argument to try to fill the gap of not having an expert witness (or any other witness) provide testimony in support of their invalidity positions. The Federal Circuit has made it clear that, in opposing summary judgment, “conclusory statements of counsel ... that a patent is invalid do not raise a genuine issue of fact.” *Biotec Biologische v. Biocorp, Inc.*, 249 F.3d 1341, 1353 (Fed. Cir. 2001) (affirming summary judgment dismissing a defendant's anticipation and obviousness defenses, holding that it was insufficient for legal counsel to merely place prior art references in the record and argue from them without any other evidence).

Accordingly, if the Court grants TQ Delta's motion to strike Mr. Lanning's expert report, Defendants will not have any testimony to support their invalidity claims, and, given the complex nature of the technology at issue in the Family 10 Patents, the Court should then grant summary judgment of no invalidity with respect to Defendants' claims and defenses under 35 U.S.C. §§ 102, 103, and 112. *See Proveris Sci. Corp. v. Innovasystems, Inc.*, 536 F.3d 1256, 1267 (Fed. Cir. 2008) (“[T]he ‘400 patent teaches a device used for calibrating drug delivery devices; this subject matter is sufficiently complex to fall beyond the grasp of an ordinary layperson. We thus are not prepared to say the district court abused its discretion in requiring Innova to present expert testimony in order to establish invalidity.”); *Joyal Prods. v. Johnson Elec. N. Am., Inc.*, No. 04-5172 (JAP), 2008 U.S. Dist. LEXIS 83069, at *10 (D.N.J. Oct. 17, 2008) (“The Court finds that the subject

matter of this case is ‘sufficiently complex to fall beyond the grasp of an ordinary layperson,’ . . . and, therefore, Johnson is required to present expert testimony at trial to prove invalidity. Lacking such testimony, their invalidity defenses and counterclaim will be dismissed.”); *Lucent Techs.*, 2007 U.S. Dist. LEXIS 35557 at *15-21 (granting summary judgment of no invalidity under Section 112 because defendants did not provide expert testimony to support their claim).

VII. CONCLUSION

TQ Delta respectfully requests that the Court grant summary judgment that (1) the Accused Products infringe claim 36 of the 686 patent; (2) the Accused Products infringe claim 10 of the 354 Patent; and (3) claim 10 of the 354 Patent and claim 16 of the 988 Patent are not invalid under §§102, 103, or 112.

Dated: December 14, 2022

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document and all attachments thereto are being filed electronically in compliance with Local Rule CV-5(a). As such, this document is being served this December 14, 2022 on all counsel of record, each of whom is deemed to have consented to electronic service. L.R. CV-5(a)(3)(A).

/s/ Christian Hurt
Christian Hurt

